TITLE OF THE INVENTION

MinK-RELATED GENES, FORMATION OF POTASSIUM CHANNELS AND ASSOCIATION WITH CARDIAC ARRHYTHMIA

ABSTRACT OF THE DISCLOSURE

The present invention is directed to genes and gene products related to Min-K which form ion channels and to a process for diagnosis of ion channel disorders, including long QT syndrome (LQT). For example, KCNE2 forms I_{Kr} potassium channels and is associated with LQT. LQT is diagnosed in accordance with the present invention by analyzing the DNA sequence of *KCNE2* of an individual to be tested and comparing the respective DNA sequence to the known DNA sequence of a normal *KCNE2* gene. Alternatively, these MinK-related genes of an individual to be tested can be screened for mutations which cause ion channel disorders, including LQT. Prediction of ion channel disorders, including LQT, will enable practitioners to prevent the disorders using existing medical therapy. This invention is further directed to the discovery that the HERG and KCNE2 (also known as MiRP1) proteins coassemble to form a cardiac I_{Kr} potassium channel.